INTERNATIONAL STAFF WEEK UCA-IUS

UCA
Universidad de Cádiz

INTERNATIONAL UNIVERSITY OF SARAJEVO
2004
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UCA
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de Cádiz

INDEX

Faculty of Sciences

José Manuel Gómez Montes de Oca

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Academic Secretary of the Faculty of Sciencies

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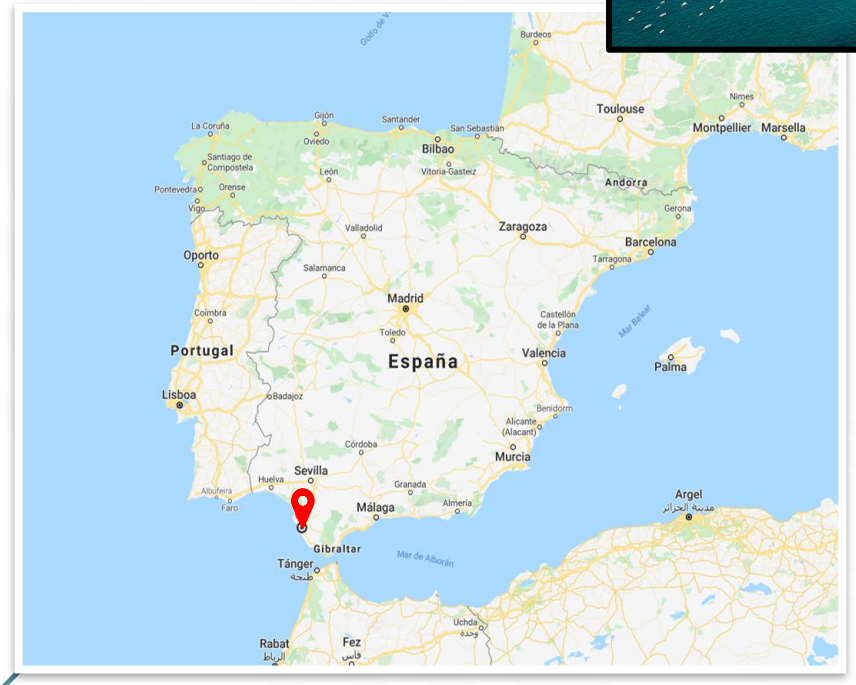
Cádiz University

4 Campus: Algeciras, Cádiz, Jerez, Puerto Real

16 Schools
45 Departments
20,832 students

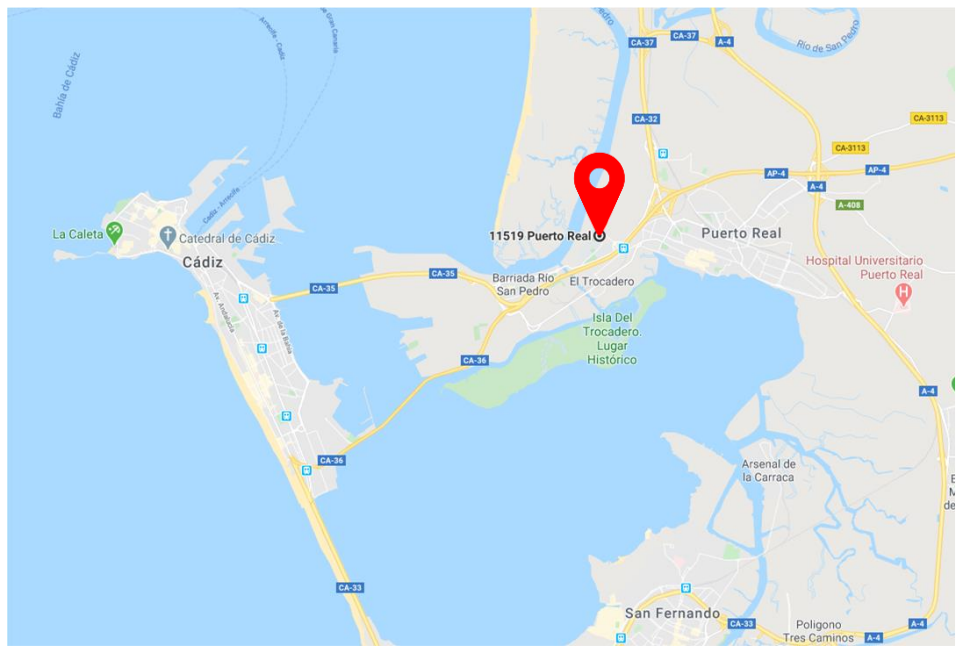


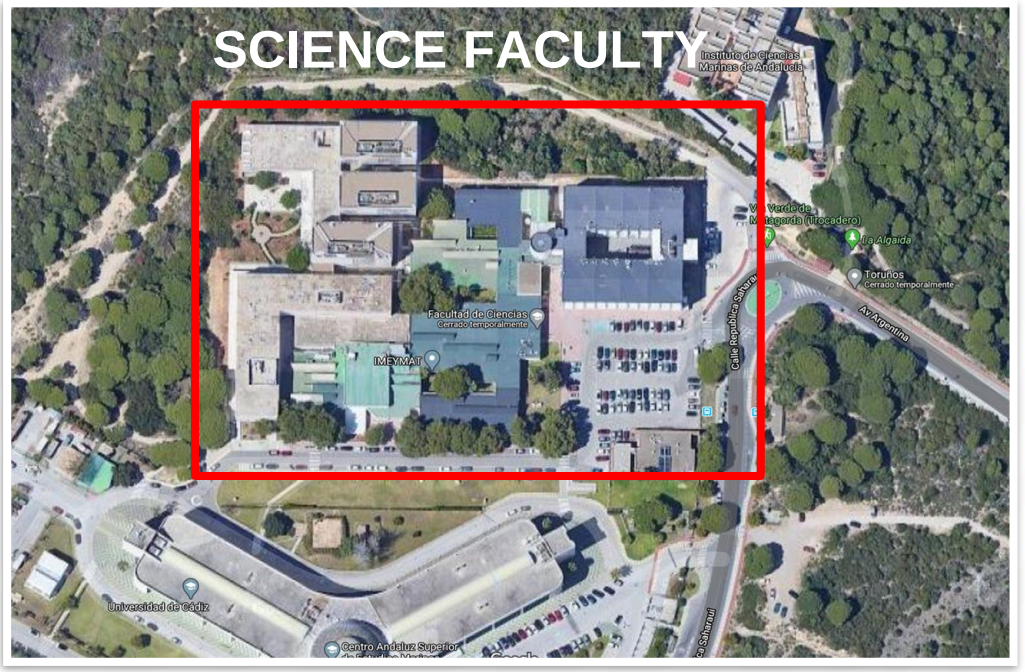
Faculty of Sciences

UCA Universidad de Cádiz

LOCALIZATION

Puerto Real Campus





www.uca.es/ciencias

Faculty of Sciences

ACADEMIC TEAM AND STUDENTS

Faculty of Sciences

UCA
Universidad de Cádiz

New Facilities

Faculty of Sciences

Faculty of Science
Dean´s Office

Student´s Office (fellows)

Programa de Orientación y Apoyo al Estudiante (PROA)

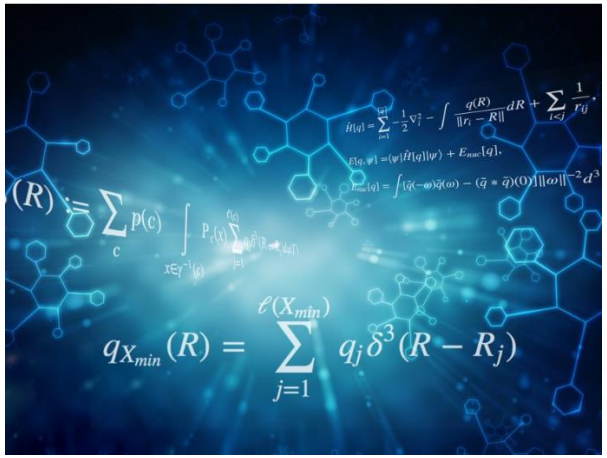
(Group-Meeting)

Faculty of Sciences

UCA Universidad de Cádiz

BIOTECHNOLOGY

CHEMICAL ENGINEERING



MATHS

OENOLOGY

CHEMISTRY

Faculty of Sciences

GENERAL DEGREE STRUCTURE

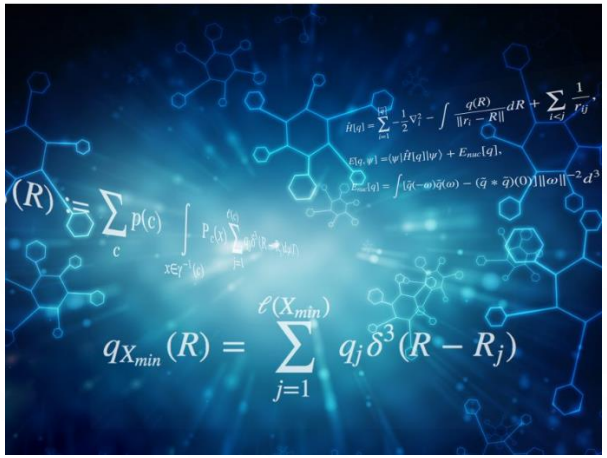
- 4 years (8 semesters)
- 30 credits/ semester
- 240 credits/ degree
- Starting academic year
- 1st semester (End September-October)
- 2nd semester (February)

Faculty of Sciences

UCA Universidad de Cádiz

BIOTECHNOLOGY

CHEMICAL ENGINEERING



MATHS

OENOLOGY

CHEMISTRY

Faculty of Sciences

UCA Universidad de Cádiz

CHEMISTRY

http://ciencias.uca.es/titulaciones/grados/quimica

	Semestre 1	Semestre 2
1°		
2°		
3°		
4°		Optatives/TFG

+ External internship (máximum 6 ECTS)

Final Project (TFM) 18 ECTS

Faculty of Sciences

UCA Universidad de Cádiz

CHEMISTRY

1st Year ⟷ 2nd Year

Semester 1st	Semester 2nd	Semester 3rd	Semester 4th
Math I (MAT 1)	Math II (MAT 2)	Physics II (FIS 2)	Material Science (CM)
Physics I (FIS 1)	Chemistry Lab (OBL)	Physical Chemistry I (QF1)	Structure and Properties of Organic Compounds (EPCO)
Statistics (EST)	Biochemistry (BQ)	Physical Chemistry II (QF2)	Analytical Chemistry II (QA 2)
Chemistry I (QUIM 1)	Chemistry II (QUIM 2)	Inorganic Chemistry I (QI1)	Physical Chemistry III (QF3)
Biology (BG)	Crystallography (CRI)	Analytical Chemistry I (QA1)	Inorganic Chemistry II (QI2)

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CHEMISTRY

3rd Year ← → 4th Year

Semester 5th	Semester 6th	Semester 7th	Semester 8th
Chemical Engineering (CQVD)	Analytical Chemistry III (QA 4)	Advanced Analytical Chemistry (QA A)	Molecular Biology (BM)
		Advanced Physical Chemistry (QF A)	
Analytical Chemistry III (QA 3)	Inorganic Chemistry III (QI4)	Advanced Inorganic Chemistry /QI A)	Metallurgy and Engineering Materials (MMI)
Physical Chemistry IV (QF4)	Organic Chemistry II (QO2)	Advanced Organic Chemistry (QO A)	Magnetic and Optical Properties of Matter (PMO)
Inorganic Chemistry III (QI3)	Analysis and Structural Determination of Natural Products (PN)	Literature Research Project (REP)	Industrial Chemistrry (QIN)
Organic Chemistry (QO1)	Chemical Reactors (3ECTS) (RQ)	Final Project (15 ECTS)	
	Biological Chemistry (3ECTS) (QB)		

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CHEMICAL ENGINEERING

http://ciencias.uca.es/titulaciones/grados/ing_quimica

	Semestre 1	Semestre 2
1°		
2°		
3°		
4°		Optatives/TFG

External internship (máximum 6 ECTS)

Final Project (TFM) 18 ECTS

Faculty of Sciences

UCA Universidad de Cádiz

CHEMICAL ENGINEERING

1st Year → 2nd Year

Semester 1st	Semester 2nd	Semester 3rd	Semester 4th
Calculus (CAL)	Stadistics and Optimization (EST)	Mathematic Applications (AMPMAT)	Heat Transmision Operations (TQ)
Graphic Expression and Design (EGR)	Physics II (FIS 2)	Science and Engineering of Materials (CIM)	Fluid Flow Transmision Operations (FF)
Informatics (INF)	Organization and Business Management (ORG)	Chemistry I (QUIM 2)	Electronics and Electrotechnics (ELEC)
Physics I (FIS I)	Geometry and Algebra (ALG)	Chemical Lab (LIQ)	Theory of Machines, Mechanism and Fabrication Process (MAQ)
Chemistry I (QUIM 1)	Chemical Engineering Principles (PIQ)	Energy and Matter Balance (BME)	Thermodynamic Applied to Chemical Engineering (TAI)

Faculty of Sciences

UCA Universidad de Cádiz

CHEMICAL ENGINEERING

3rd Year

4th Year

Semester 5th	Semester 6th	Semester 7th	Semester 8th
Energetic Technology (T. EN)	Environmental Technology (T. AMB)	Simulation and Optimization of Chemical Process	Operation Maintenance and Safety in Pilot Plan
Automatic Regulation (R. AUT)	Design of Separation Operation (DOS)	Chemical Engineering Practical Lab II	Optative
Materials Resistance (R. MAT)	Reactor Design (REAC)	Engineering Projects	Final Project (18 ECTS)
Engineering of Chemical Reactions (IRQ)	Chemical Engineering Practical Lab I EXP IQ I	Optative (12 ECTS)	
Separation Basic Operation (OBS)	Chemical Engineering (Q. IND)		

Faculty of Sciences

UCA Universidad de Cádiz

Specialize in

CHEMICAL ENGINEERING

System Management
Management of Integrated Systems
Production Management
Management of Resources and Capacities
Bioprocess
Applied Biochemistry
Industrial Microbiology
Bioreactors Design

Faculty of Sciences

UCA Universidad de Cádiz

DOUBLE DEGREES POSSIBLE

CHEMISTRY

CHEMICAL ENGINEERING

Faculty of Sciences

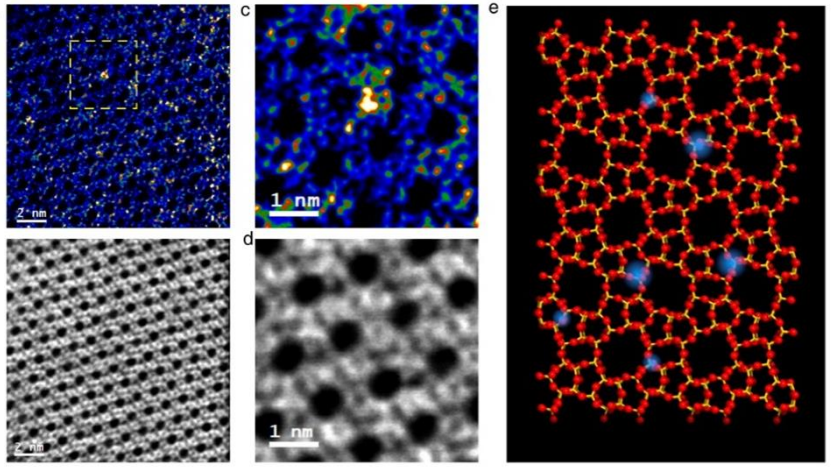
UCA Universidad de Cádiz

Master in Nanoscience and Material Technologies

University of Cádiz

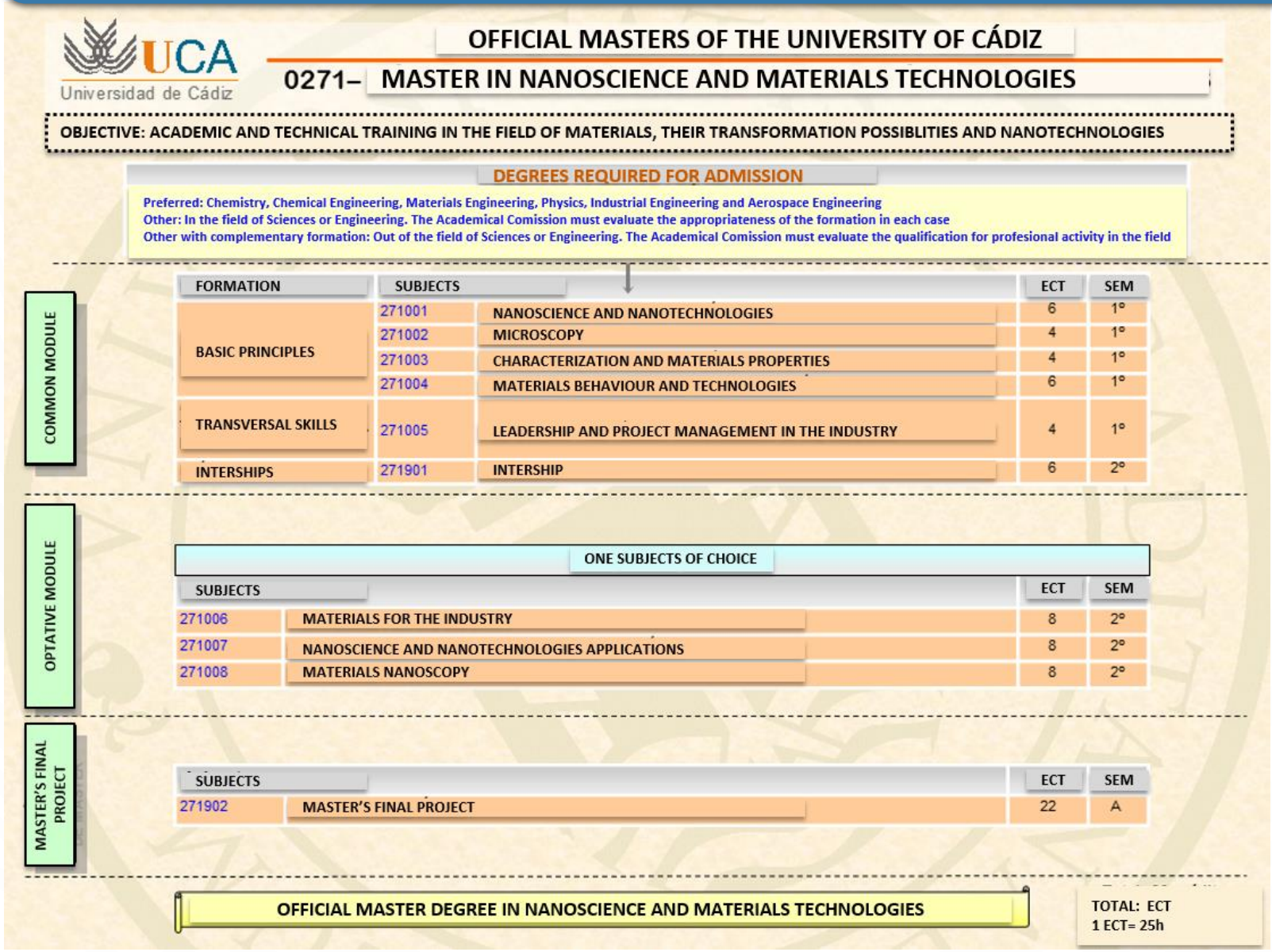
Master Coordinator: Dr. José Manuel Gatica Casas
Duration: 1 academic year (60 ECTS)

e-mail: master.nanociencia@uca.es



https://oficinadeposgrado.uca.es/informacion-basica-masteres-oficiales/master-universitario-en-nanociencia-y-tecnologia-de-materiales-0271/

Faculty of Sciences



UCA Universidad de Cádiz

OFFICIAL MASTERS OF THE UNIVERSITY OF CÁDIZ

0271– MASTER IN NANOSCIENCE AND MATERIALS TECHNOLOGIES

OBJECTIVE: ACADEMIC AND TECHNICAL TRAINING IN THE FIELD OF MATERIALS, THEIR TRANSFORMATION POSSIBLITIES AND NANOTECHNOLOGIES

DEGREES REQUIRED FOR ADMISSION

Preferred: Chemistry, Chemical Engineering, Materials Engineering, Physics, Industrial Engineering and Aerospace Engineering
Other: In the field of Sciences or Engineering. The Academical Comission must evaluate the appropriateness of the formation in each case
Other with complementary formation: Out of the field of Sciences or Engineering. The Academical Comission must evaluate the qualification for profesional activity in the field

COMMON MODULE

FORMATION	SUBJECTS		ECT	SEM
BASIC PRINCIPLES	271001	NANOSCIENCE AND NANOTECHNOLOGIES	6	1º
	271002	MICROSCOPY	4	1º
	271003	CHARACTERIZATION AND MATERIALS PROPERTIES	4	1º
	271004	MATERIALS BEHAVIOUR AND TECHNOLOGIES	6	1º
TRANSVERSAL SKILLS	271005	LEADERSHIP AND PROJECT MANAGEMENT IN THE INDUSTRY	4	1º
INTERSHIPS	271901	INTERSHIP	6	2º

OPTATIVE MODULE

ONE SUBJECTS OF CHOICE

SUBJECTS		ECT	SEM
271006	MATERIALS FOR THE INDUSTRY	8	2º
271007	NANOSCIENCE AND NANOTECHNOLOGIES APPLICATIONS	8	2º
271008	MATERIALS NANOSCOPY	8	2º

MASTER'S FINAL PROJECT

SUBJECTS		ECT	SEM
271902	MASTER'S FINAL PROJECT	22	A

OFFICIAL MASTER DEGREE IN NANOSCIENCE AND MATERIALS TECHNOLOGIES

TOTAL: ECT
1 ECT= 25h

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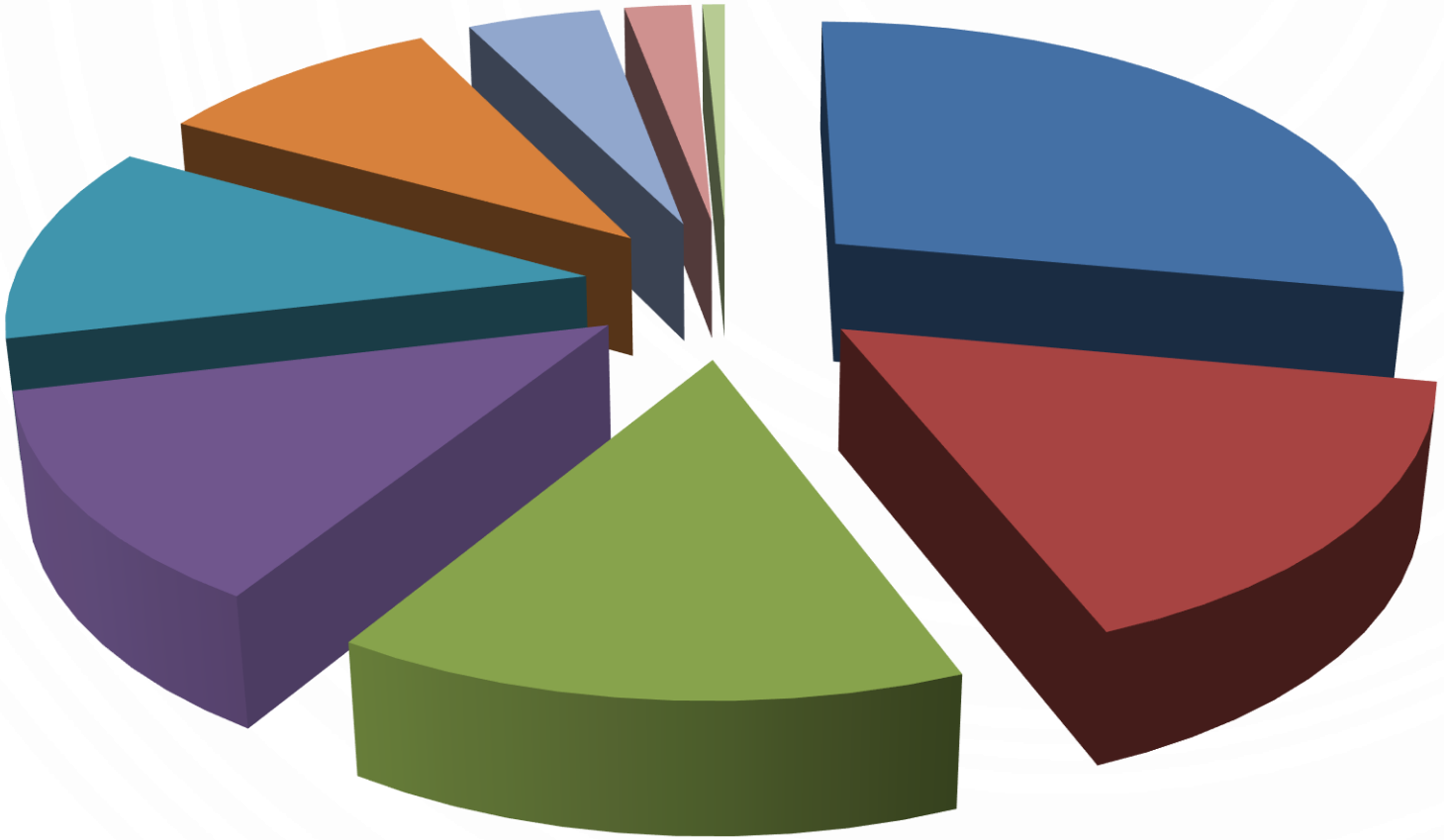
RESEARCH, INNOVATION, KNOWLEDGE TRANSFER



- Humanities (38)
- Health Sciences (22)
- Physics, Chemistry, Mathematics (20)
- Social Sciences, Economy and Laws (17)
- Natural Resources and Environmental Sciences (16)
- Tecnologyes for Production (13)
- TIC's (6)
- Agrifood (3)
- Biology and Biotechnology (1)

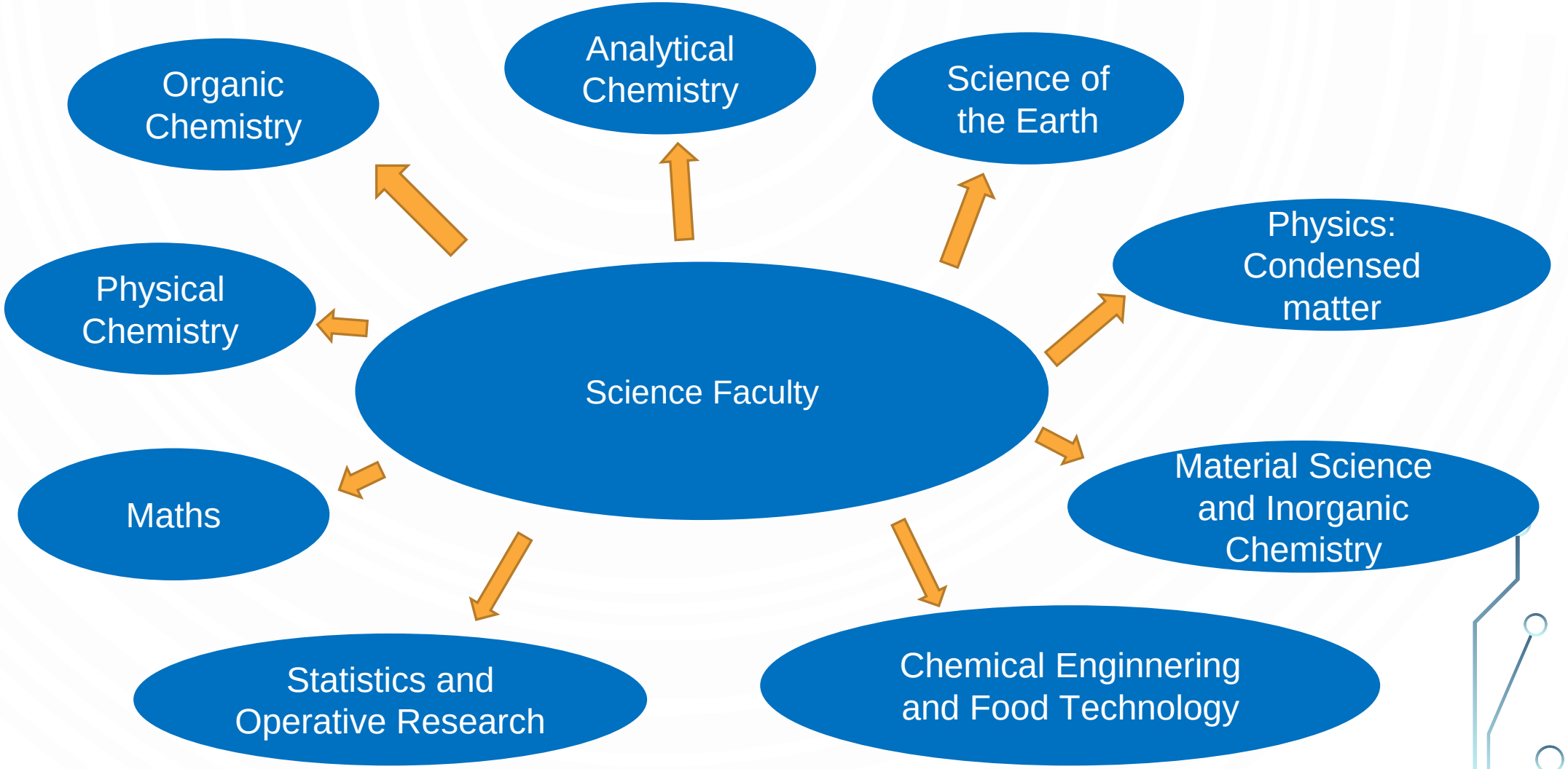
1800 scientist

136 research groups

Faculty of Sciences

UCA Universidad de Cádiz

9 Departments



Research Institutes and Services

IMEYMAT

SC-ICYT

UCA
Universidad de Cádiz

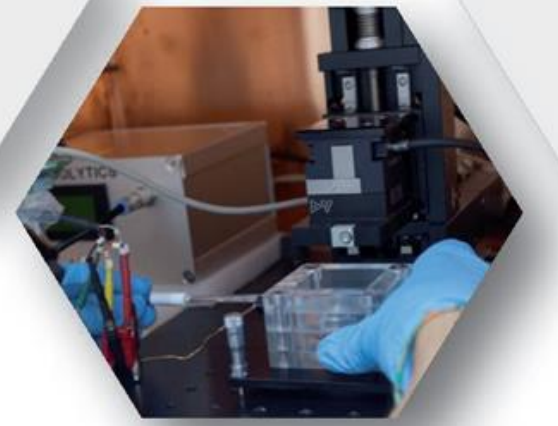
IMEYMAT

Institute of Electron Microscopy and Materials

UCA
Universidad de Cádiz

IMEYMAT

UCA
Universidad de Cádiz



IMEYMAT

TEAMS OF RESEARCH

UCA Universidad de Cádiz

INORGANIC CHEMISTRY

- **Structure and Chemistry of Nanomaterials** — FQM-334
- **Solid State Chemistry** — FQM-110
- **Corrosion and Protection** — TEP-231

ANALITIC CHEMISTRY

- **Instrumentation and Environmental Chemistry** — FQM-249

PHYSICAL CHEMISTRY

- **Simulation, Characterization and Evolution of Materials** — FQM-166
- **Molecular Sieves and Other Nanomaterials** — TEP-243

IMEYMAT

TEAMS OF RESEARCH

UCA Universidad de Cádiz

PHYSIC OF CONDENSED MATTER

Applied Magnetism and Optics

FQM-335

Novel Sol-Gel Materials

TEP-115

Physical Properties of Amorphous Solids

FQM-154

MATERIALS SCIENCE AND ENGINEERING

Materials Science and Engineering

TEP-120

Materials and Nanotechnology for Innovation

TEP-946

DOCTORAL PROGRAMS

PhD Program in Nanoscience and Materials Technologies

PhD Program in Nanoscience and Materials Technologies

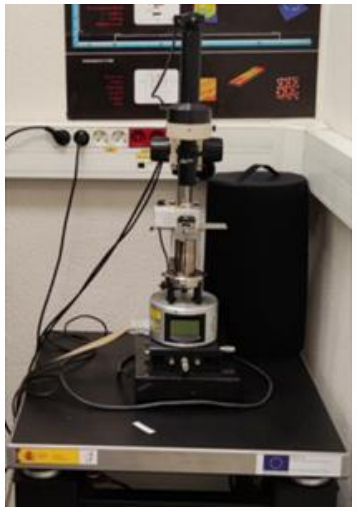
PhD Program in Manufacturing, Materials and Environmental Engineering

PhD Program in Manufacturing, Materials and Environmental Engineering

EQUIPMENT

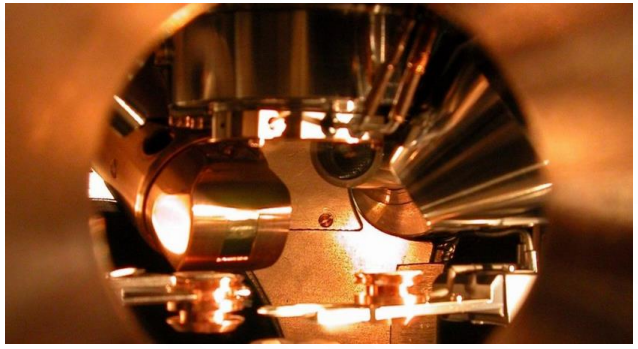
- TESCAN SOLARIS UHR FESEM (FIB)

- AFM Bruker Multimode 8-HR



- AFM Bruker Dimension ICON

- X-Ray Photoelectron Spectroscopy (XPS)



Among others….

Future equipment in development
- Cathodoluminescence (CL)
- Electron-beam-induced current (EBIC)

SC-ICYT

UCA Universidad de Cádiz

Central Science and Technology Service

The Central Science and Technology Service (SC-ICYT) is a general research support service in which the main scientific equipment of the University of Cádiz is centralized.

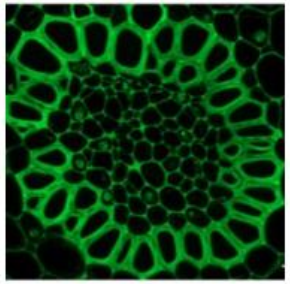
Central Science and Technology Service

SC-ICYT

UCA Universidad de Cádiz

UCA Universidad de Cádiz

Análisis de Biomoléculas y Microscopía Confocal



Difracción y Fluorescencia de Rayos X

Espectrometría de Masas

Espectroscopía Atómica

Fabricación Aditiva

Microscopía Electrónica

Resonancia Magnética Nuclear

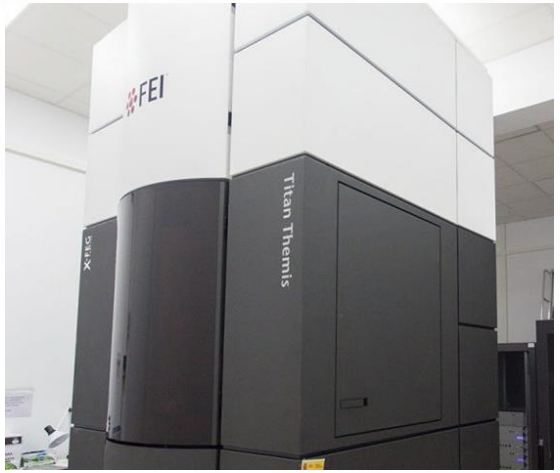
Espectroscopía de Fotoelectrones

Central Science and Technology Service

ELECTRON MICROSCOPY

Transmission electron microscopy

- JEOL2100 LaB6
- FEI TALOS F200X
- FEI Titan3 Themis 60-300



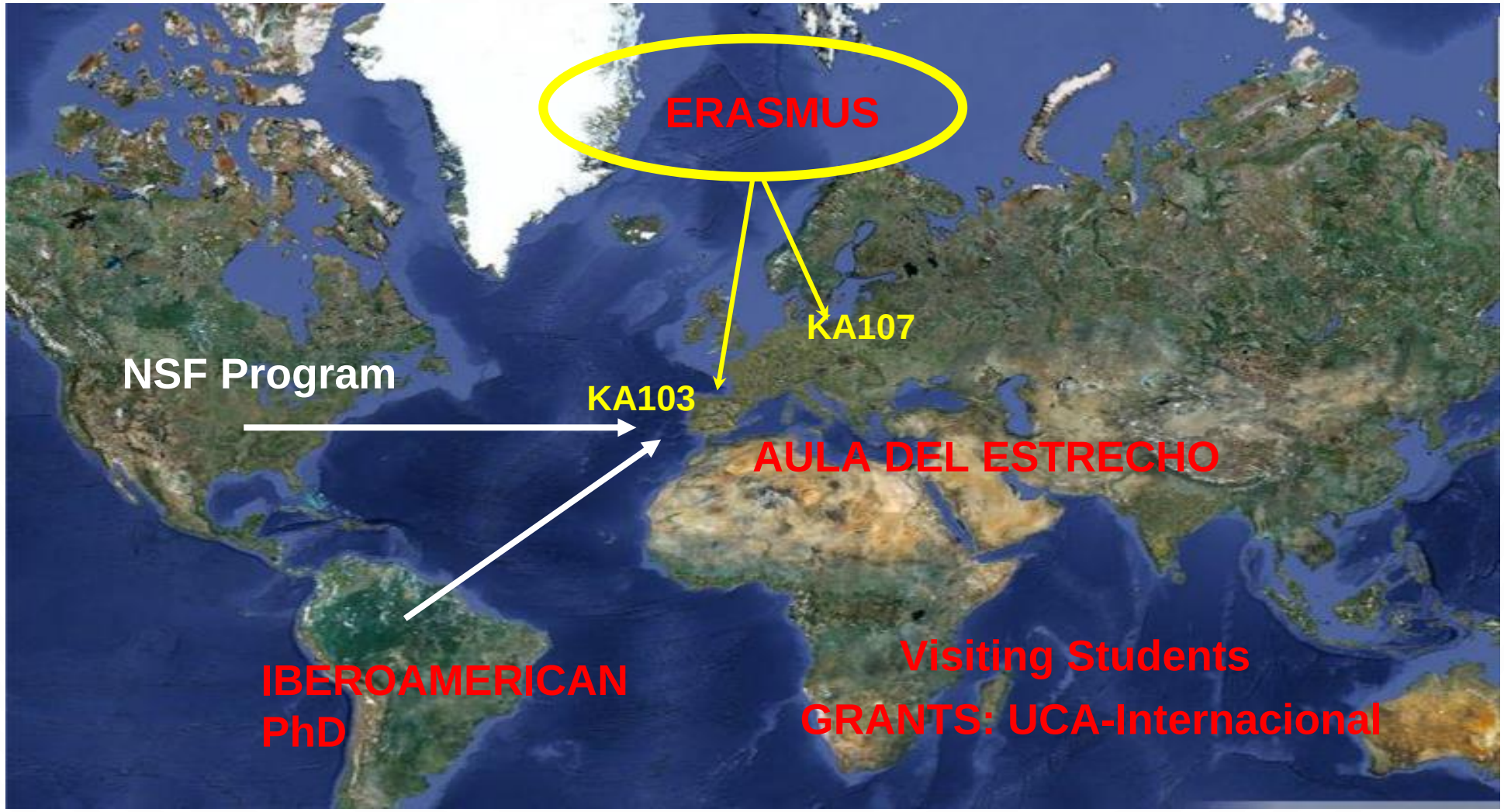
Scanning electron microscopy and Focus Ion Beam

- FEI Microscopio Electrónico de Haz Doble Scios2
- FEI Nova NanoSem 450
- TESCAN SOLARIS UHR FESEM (FIB)

Faculty of Sciences

UCA Universidad de Cádiz

Mobility Programs



Faculty of Sciences

European University of the Seas

coordination.seaeu@uca.es

Faculty of Sciences

Research

Materials Science and Engineering group

UCA Universidad de Cádiz

Research lines based on synthetic Diamond

Composite Materials

- Diamond-coated carbon fibers, the new generation of composites (CFRP)?
- Aircraft wing energy harvesting through diamond based piezo systems

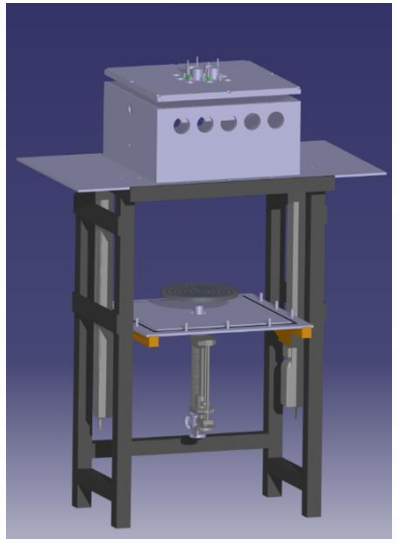
Electronic devices

- Microstructural & IV characterization of diamond-based power devices
- In situ development of a diamond nano-field-effect transistor for electronics application based in an alternative fabrication process

Research lines

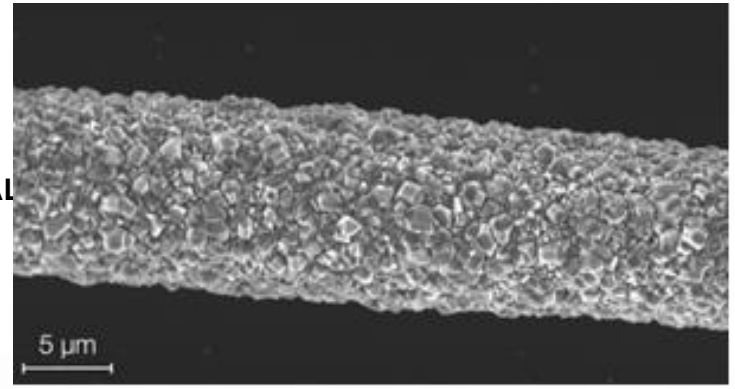
Diamond-coated carbon fibres, the new generation of composites (CFRP)?

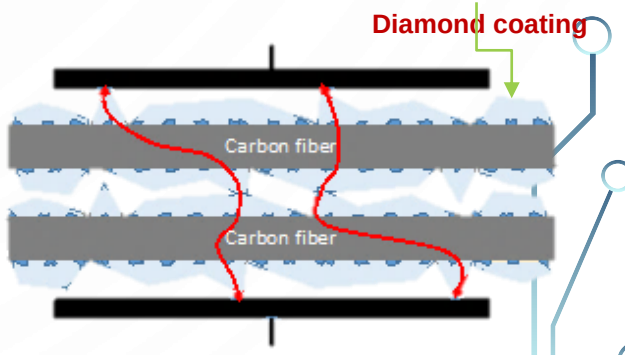
Phase 1. Diamond Growth by Chemical Vapour Systems (CVD)



Phase 2. Characterization

- Structural
- Electrical
- Mechanical
- Thermal





Electrical/Thermal conductivity diagram

Research lines

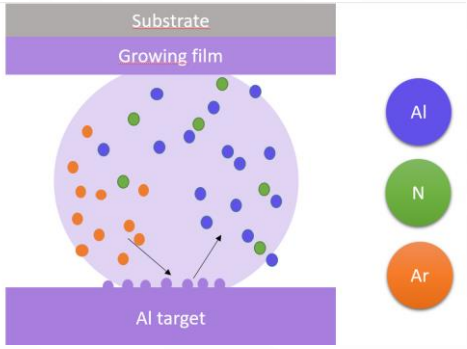
Aircraft wing energy harvesting through diamond based piezo systems

PHASE 1. ALN/ DIAMOND GROWTH

ENERGY HARVESTING

Highly doped diamond	CVD
AlN	PVD
Low doped diamond	CVD

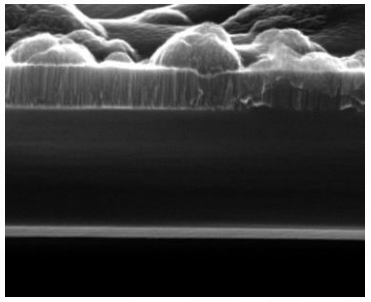
PHYSICAL VAPOR DEPOSITION (PVD): DC-SPUTTERING

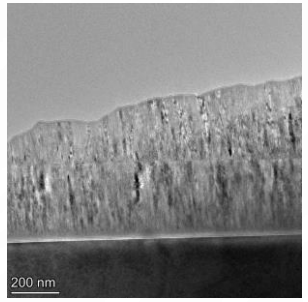


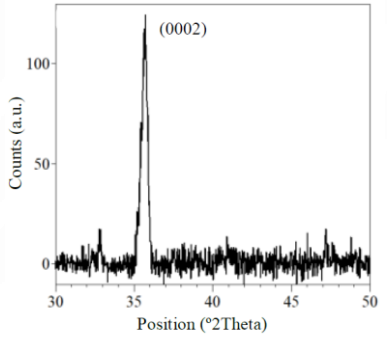
PHASE 2. CHARACTERIZATION

- **STRUCTURAL**

SEM | TEM | XRD

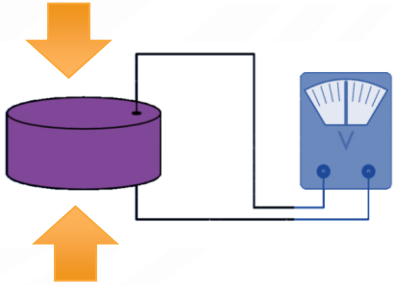






- **PIEZOELECTRIC**

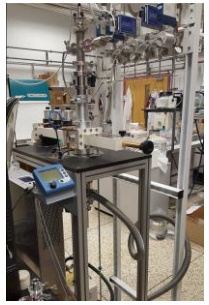
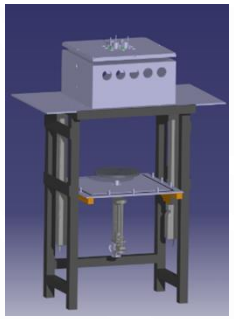
d33 measurements



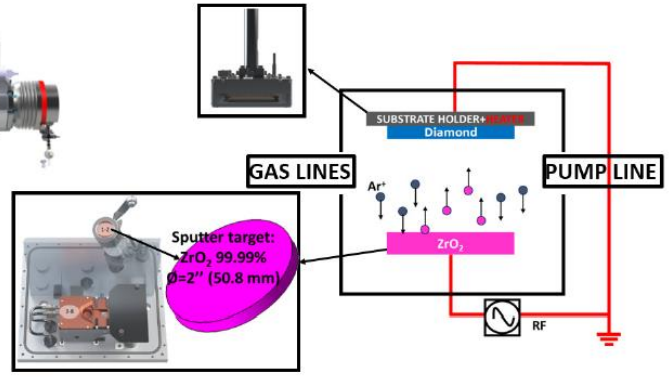
Research lines

Diamond-based power electronics: fabrication and microstructural & IV

Phase 1. Diamond Growth by Chemical Vapour Systems (CVD)

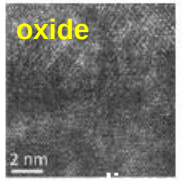
Phase 2. Oxide Growth by Physical Vapour Systems: RF-Sputtering PVD

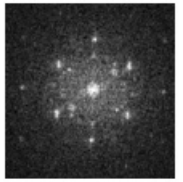
Phase 3. Characterization

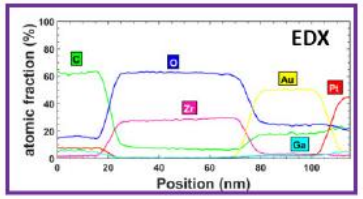
- **Structural**

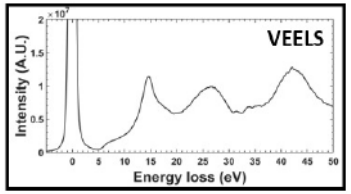
HREM



Electron diffraction

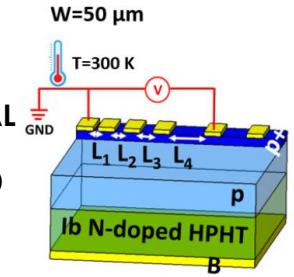


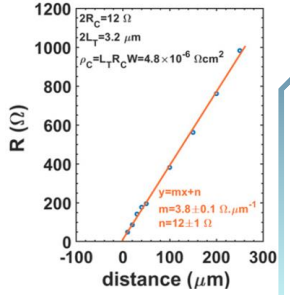




- **Electrical**

TLM METHOD

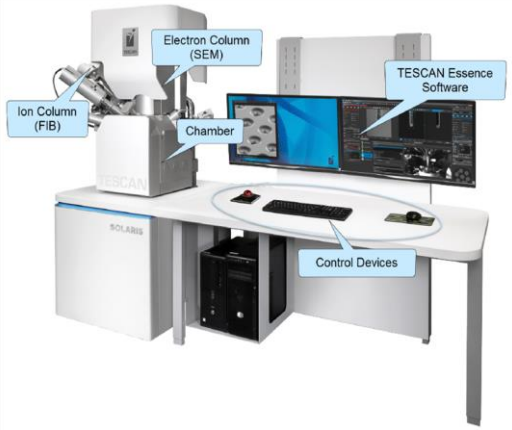




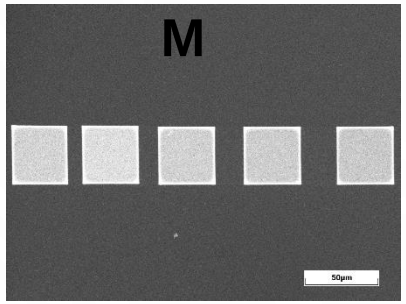
Research lines

In situ development of a diamond nano-FET based in an alternative fabrication

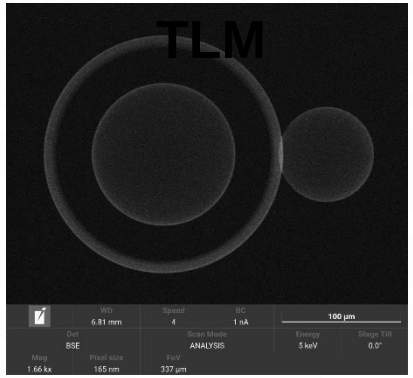
PHASE 1. NANO FABRICATION BY FIB-TECHNIQUE



TL M



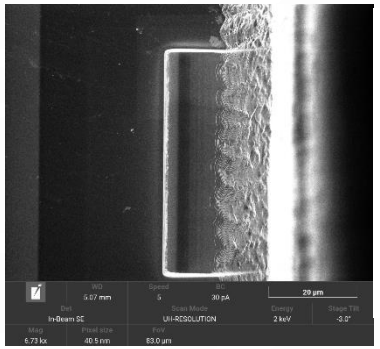
c-TLM



PHASE 2. CHARACTERIZATION

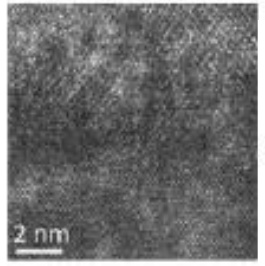
- **STRUCTURAL**

SEM

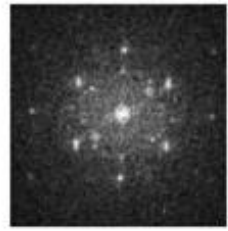


TEM

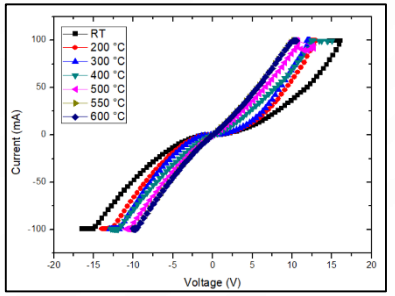
HREM

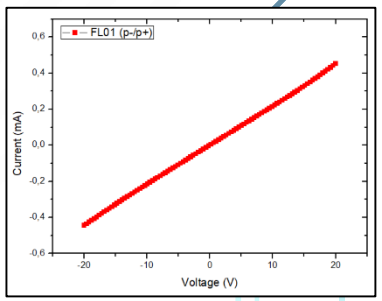


Electron diffraction



- **ELECTRICAL**





International Collaborations

UCA Universidad de Cádiz

FZU Institute of Physics of the Czech Academy of Sciences

UWS UNIVERSITY OF THE WEST of SCOTLAND TFSI Institute of Thin Films, Sensors and Imaging

cnrs NÉEL institut

DEPARTMENT OF ENGINEERING SCIENCE UNIVERSITY OF OXFORD UCL LCN LONDON CENTRE FOR NANOTECHNOLOGY

Laplace LABORATOIRE PLASMA ET CONVERSION D'ÉNERGIE

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THANK YOU FOR YOUR ATTENTION